# Correlates of Poverty: Evidence from the Community-Based Monitoring System (CBMS) Data

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> This study identified correlates of poverty for Pasay City and Mogpog, Marinduque representing an urban and a rural area in the Philippines, respectively, by utilizing the 2005 census data from its Community-Based Monitoring System. Regression models with the arcsine of the square root of barangay level poverty incidence as dependent variable were investigated which allowed the identification of the correlates of poverty at the barangay level. Results showed that the significant correlates of barangay poverty incidence were average household size, proportion of households whose housing units/lot are not owned and proportion of households who own telephone/cellphone. Furthermore, lower poverty incidences were observed in barangays located in an urban area.

> Keywords: poverty, poverty incidence, correlates of poverty, community-based monitoring system

For purposes of eradicating poverty, information is required about the poor and their circumstances – who they are, where they live, what social and economic conditions they face, how they respond to programs and projects intended for them, and so forth. With such poverty profile, Local Government Units (LGUs) can prepare comprehensive development plans geared towards poverty reduction, among others. Through its improved design and implementation, benefits of poverty alleviation efforts are maximized. A very vital tool in this undertaking is statistical data.

The National Statistics Office (NSO) is the main source of official statistics in the Philippines that LGUs and policy makers relied on when they formulate policies and implement projects and programs geared towards poverty reduction. With the Family Income and Expenditure Survey (FIES) they conduct every three years, poverty statistics are being computed down to the provincial level with an acceptable measure of reliability.

However, poverty statistics at smaller geographical division such as municipalities/cities and barangays are needed to better implement and monitor poverty reduction strategies. Although small area estimation methodologies are currently being employed that utilizes information from surveys and censuses, alternative approaches to generating small area poverty statistics is needed that utilizes baseline information that will complement the official poverty statistics being generated by NSO.

# **Objectives of the Study**

The primary objective of this study was to determine correlates of poverty, utilizing the data from the Community-Based Monitoring System (CBMS) for effective beneficiary targeting. Specifically, this study aimed to (1) generate poverty incidence at the barangay level using the CBMS data set from Pasay City and Mogpog, Marinduque, an urban and a rural area, respectively; and (2) determine the correlates of poverty and generate poverty models useful for monitoring purposes in these areas.

Generated poverty incidences can be used in determining the poverty situation at the barangay level which can aid LGUs in their local level program and policy development. Coupled with identified correlates of poverty, LGUs' ability to target the most needy can be enhanced.

Furthermore, such correlates of poverty can be used for evaluating existing programs and projects that will determine if they work or not, and will indicate what changes are needed for better utilization of resources and targeting of beneficiaries.

#### METHODOLOGY

The study utilized CBMS data collected from Pasay City and Mogpog, Marinduque in the Philippines during the 2005 census year. The data were a complete enumeration of 65,117 households in 201 barangays in Pasay City, and 6,650 households in 38 barangays in Mogpog, Marinduque.

Variables included in the study were those that are available across LGUs of Pasay City and Mogpog, Marinduque. It included demographic and socio-economic characteristics of the households from which several indices were created to facilitate the model-building process.

Using the reported total income of the household, a household's per capita income was computed as the household's total income divided by the size of the household. The poverty status of the household, whether poor or non-poor, was then determined following the official methodology of the Philippines for poverty measurement. That is, a household was classified as poor if its per capita income is below the poverty threshold, the per capita income necessary to meet basic food and non-food needs of a household. Otherwise, the household was classified as non-poor (National Statistical Coordination Board [NSCB], 2006). For 2005, NSCB estimated the poverty thresholds for Pasay City at Php 18,723 and for Marinduque at Php 13,859.

With the barangay as small area unit, the poverty incidences were estimated by taking the ratio of the total number of poor households to the total number of households in that barangay. In the model-building process, this poverty incidence at the barangay level was considered as the variable whose values are to be predicted. The independent variables or predictors in the model were the indices constructed based on the available variables.

In generating poverty profiles for Pasay City and Mogpog, Marinduque, bivariate analyses were performed that allowed the characterization of the poor. Because some of the variables were in the nominal scale such as gender of the household head, while others were in at least ordinal scale such as size of the household, both contingency and correlation analyses were performed at 5% level of significance to identify the correlates of poverty.

Multivariate analysis was likewise performed to determine determinants of barangay poverty incidence. This regression model of the poverty situation at the barangay level allowed the investigation of the effects of a particular aggregated correlate of poverty conditional on the levels of the other identified correlates.

Because the response variable were proportions, the regression model was specified as

$$\operatorname{arcsin}(\sqrt{Y_i}) = \beta X_i + \varepsilon_i$$

where Y is the poverty incidence of the  $i^{th}$  barangay,  $\beta$  is the vector of regression coefficients, X is the vector of indices based on the identified correlates of poverty, and  $\varepsilon_i$  is the regression model noise. The arcsine transformation allows proportions to be made nearly "normal".

Residual analyses were performed to determine if underlying assumptions of the linear regression model were satisfied. Assumptions investigated included normality with the use of the Shapiro-Wilk's test statistic, independence with the use of the Durbin-Watson test statistic, and absence of multicollinearity among independent variables with the use of the tolerance and variance inflation statistics.

All results were generated using the Statistical Analysis System (SAS) software.

# **RESULTS AND DISCUSSION**

Poverty Incidence. Poverty incidence indicated that 101 of the 201 barangays in Pasay City had poverty incidence estimates of at most 10.0% (Table 1). The distribution of poverty incidence in Pasay City was skewed to right, with only 3.5% of the barangays having poverty incidences greater than 30%. The poorest barangay had a poverty incidence of 42.1%, while one barangay had no poor household.

On the other hand, all of the 36 barangays in Mogpog, Marinduque had poverty incidence estimates higher than 20%. This was expected since Mogpog, Marinduque is classified as a rural area and studies have shown that location attributes (whether urban or rural) determine living standard of households (Balisacan, 1997; Albert & Collado, 2004). In particular, households located in urban areas were betteroff relative to those in rural areas. Hence, the distribution of poverty incidence was observed to be skewed to the left, with nearly 70% of the barangays having poverty incidences greater than 60%. Also, the poorest barangay had a poverty incidence as high as 93.62%. That is, nine out of 10 households in this barangay were poor. The least poverty incidence among the barangays in Mogpog, Marinduque was 28.22%.

#### Table 1

BOVEDTV INCIDENCE (9/)	AREA		
FOVERI FINCIDENCE (76)	Pasay City	Mogpog, Marinduque	
<= 10	50.3	0.0	
11 - 20	32.3	0.0	
21-30	13.9	2.8	
31-40	3.0	11.1	
41 - 50	0.5	11.1	
51-60	0.0	5.6	
61 - 70	0.0	27.8	
71-80	0.0	16.7	
81 - 90	0.0	19.4	
> 90	0.0	5.6	

Percentage distribution of poverty incidence by area, 2005

*Correlates of Poverty.* Several household demographic characteristics are significant indicators of higher poverty incidence in both Pasay City and Mogpog, Marinduque: "male household head", "without OFW", and "with handicapped" (Table 2). There was also a very evident trend wherein the lower the household head's educational level, the higher the poverty incidence.

From Table 3, engagement in the following economic activities was found to be significant indicators of poverty incidence for both Pasay City and Mogpog, Marinduque: engagement in crop farming/gardening, livestock, transportation/ storage/communication, and construction. But other economic characteristics of households were found to be significant on only one area since some data were not available for the other area.

# Table 2

Distribution of poor households by demographic characte	eristics	and	area
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VARIABLE CATEGORIES		PASA	PASAY CITY		MOGPOG, MARINDUOUF	
		% POOR	P-VALUE	% POOR	P-VALUE	
SEX	Female	9.2	< 0.0001	54.0	< 0.0001	
(Sex of Household Head)	Male	14.9	< 0.0001	69.3	< 0.0001	
	No grade completed	30.3		76.1		
EDUC	Elementary undergraduate	24.6		77.1		
(Highest educational	Elementary graduate	22.4		74.5		
attainment of	High school undergraduate	24.3	< 0.0001	71.5	< 0.0001	
household head)	High school graduate	14.2		62.7		
	College undergraduate	9.6		46.9		
	College graduate and beyond	3.7		27.1		
OFWIND	Without OFW	14.4	< 0.0001	69.0	< 0.0001	
(OFW indicator)	With OFW	5.0	< 0.0001	23.3		
UNIPARENT (Single-parent	Without single parent	13.6	0.3873	66.0	0.0517	
indicator)	With single parent	14.0	0.3873	70.7	0.0317	
THIRDSEX	Without third sex	13.6	0.0000			
(Third sex indicator)	With third sex	18.2	0.0006	N.A.	N.A.	
HANDICAPPED	Without handicapped	13.4	< 0.0001	65.7	0.0000	
(Handicapped indicator)	With handicapped	22.2	< 0.0001	71.7	0.0022	
BOARDIND	Without boarder / bedspacer	13.2	< 0.0001	NA	N A	
(Boarder / bedspacer Indicator)	With boarder / bedspacer	9.0	< 0.0001	N.A.	IN.A.	
ORGIND (Member of	Not a member	NIA	N A	69.2	< 0.0001	
any community organization)	Member	N.A.	IN.A.	55.9	< 0.0001	

N.A. - not available.

# Table 3

Distribution of poor households by economic activities and area

VARIARI F	VARIABLE CATEGORIES % PASA POOR		AY CITY	Y CITY MOGPOG, MARINDUQUE	
VARIADLE			P-VALUE	% POOR	P-VALUE
JOBIND	Without	13.3	0.1119	59.5	< 0.0001
(Job/work indicator)	With	13.7	0.1110	68.7	
<b>CROPIND</b> (Engaged in crop farming and	Not engaged	13.7	< 0.0001	63.9	< 0.0001
gardening)	Engaged	7.3	< 0.0001	70.5	
POULTIND	Not engaged	13.6	0.0300	59.7	< 0.0001
(Engaged in livestock / poultry)	Engaged	7.5	0.0300	71.9	
FISHIND	Not engaged	13.6	0.3320	62.1	< 0.0001
(Engaged in fishing)	Engaged	17.6	0.3320	82.7	
FORIND	Not engaged	13.6	0.1757	64.4	< 0.0001
(Engaged in forestry)	Engaged	7.8	0.1737	72.3	
SALIND	Not engaged	13.6	0.5560	68.5	< 0.0001
(Engaged in wholesale / retail)	Engaged	13.8	0.3309	57.6	
PUBLIND	Not engaged	13.6	0.1142	NI A	NI A
(Engaged in publishing)	Engaged	9.1	0.1145	N.A.	IN.A.
MANIND	Not engaged	13.6	0.0768	66.2	0.1806
(Engaged in manufacturing)	Engaged	11.0		70.6	
MAINTIND (Engaged in maintenance	Not engaged	13.6	0.0296	NA	N A
services)	Engaged	16.0		IN.A.	N.A.
FOODIND	Not engaged	13.6	0.0086	NA	NA
(Engaged in food services)	Engaged	10.2	0.0080	<u>п.л.</u>	IN.A.
ENTERTAIN (Engaged in	Not engaged	13.6	0.0009	ΝΔ	NA
entertainment services)	Engaged	7.0	0.0007	<u>п.л.</u>	IN.A.
<b>SERVIND</b> (Engaged in community social &	Not engaged	13.6	0.9337	66.5	< 0.0001
personal services)	Engaged	13.5	0.9557	43.8	0.0001
<b>COMPUTIND</b> (Engaged in computer	Not engaged	13.6	0.0012	NA	NA
communication)	Engaged	6.9	0.0012	11.21.	11.71.
<b>TRNIND</b> (Engaged in transpo_storage &	Not engaged	13.3	< 0.0001	67.1	< 0.0001
comm.)	Engaged	17.9	< 0.0001	59.0	< 0.0001
MININD	Not engaged	13.6	0.7512	65.9	< 0.0001
(Engaged in mining & quarrying)	Engaged	14.8	0.7515	85.2	< 0.0001
CNSIND	Not engaged	13.5	< 0.0001	65.7	0.0010
(Engaged in construction)	Engaged	19.2	< 0.0001	71.8	0.0018
EOTHIND	Not engaged	13.6	0.0500	66.3	0.0414
(Engaged in other activities NEC)	Engaged	16.7	0.0509	65.3	0.8414

N.A. - not available.

# Table 4

Distribution of poor households by household's basic needs and area

		PASAY CITY		MOGPOG,	
VARIARIF	CATECORIES	11101		MARI	NDUQUE
VARIADLE	CATEGORIES	% POOR	P-VALUE	% POOR	<b>P-VALUE</b>
	Owner, owner-like house and lot	9.5		57.2	
	Rent house / room including lot	15.6		52.9	
TENUR	Own house / rent lot	14.2		73.5	
(Tenure status of	Own house /rent-free lot with consent	17.1	< 0.0001	78.7	< 0.0001
house / lot)	Own house /rent-free lot without consent	25.2	< 0.0001	82.6	< 0.0001
	Rent-free hse and lot with consent	13.6		73.6	
	Rent-free hse and lot without consent	28.9		86.7	
	Other	43.3		72.7	
	Single house	13.2			
UTVDE	Duplex	15.6			
(House trme)	Apartment	10.5	< 0.0001	N.A.	N.A.
(nouse type)	Commercial	12.2			
	Other	36.6			
	Strong	10.3		54.4	
WATT	Light	26.3		83.0	
WALL (Construction	Salvaged / makeshift	30.0	< 0.0001	88.3	< 0.0001
	Mixed but predominantly strong	20.0	< 0.0001	67.0	< 0.0001
materials of walls)	Mixed but predominantly light	32.2		81.2	
	Mixed but predominantly salvaged	40.7	]	85.4	
	Strong	10.6	< 0.0001	58.2	
DOOF	Light	18.9		83.4	< 0.0001
ROOF	Salvaged / makeshift	19.2		89.7	
	Mixed but predominantly strong	16.4		74.9	
materials of roof)	Mixed but predominantly light	32.1		82.4	
	Mixed but predominantly salvaged	37.3		85.4	
	Community water system-own	33.3		51.6	
	Community water system – shared	24.0		75.2	
WATER	Deep well – own	19.2		34.5	
(Type of water	Deep well – shared	26.5		66.2	
facility)	Artesian well – own	25.0		41.0	
	Artesian well – shared	27.3	< 0.0001	68.9	< 0.0001
	Dug/shallow well – own	22.2	1	72.5	
	Dug/shallow well – shared	14.3		9.1	
	River, stream, lake,	0.0		79.8	
	Bottled water	9.1		8.9	
	Others	28.1		58.1	
	Water-sealed own	6.7		55.7	
TOIL	Water-sealed – shared	18.9		70.2	
(Type of toilet	Closed pit	11.6	< 0.0001	81.6	< 0.0001
facility)	Open pit	19.3	< 0.0001	80.3	< 0.0001
	No toilet	34.3		87.2	
	Others	33.1	1	83.3	
FSHORT	Without food shortage	13.2		64.5	.0.0001
(Experienced food shortage)	With food shortage	46.7	< 0.0001	88.2	< 0.0001

N.A. - not available.

A lower poverty incidence was observed among households in Pasay City who were engaged in crop farming and gardening, livestock/ poultry, food services, entertainment services, and computer communication. On the other hand, a higher poverty incidence was seen among households who were engaged in maintenance services, transportation/storage/communication, and construction.

This is contrary to the findings from Mogpog, Marinduque where higher poverty incidences were observed among households engaged in crop farming and gardening, livestock/poultry, fishing, forestry, transportation, storage and communication, mining and quarrying, and construction. While the following economic activities were significant indicators of lower poverty incidence: wholesale/retail, and community/social/personal services.

Households' basic needs such as tenure status of house and lot, construction materials of wall and roof, types of water and toilet facilities, and experience of food shortage were significant predictors of the poverty status of households for both Pasay City and Mogpog, Marinduque (Table 4).

Ownership of household consumer durables such as TV, VHS, computer, refrigerator, electric iron, LPG/gas stove/range, washing machine, microwave oven, telephone/cellphone, aircon, and vehicles was significantly associated with poverty incidence (Table 5). Specifically, poverty

#### Table 5

Distribution of poor households by household's consumer durables and area

	PASAY		AY CITY	MOGPOG, MARINDUQUE	
VARIABLE	CATEGORIES	% POOR	P-VALUE	% POOR	P-VALUE
TV	Without	22.1	< 0.0001	81.9	< 0.0001
(Own TV)	With	12.3	< 0.0001	53.6	< 0.0001
VHS	Without	20.5	< 0.0001	77.4	< 0.0001
(Own VHS / VCD / DVD player)	With	9.7	< 0.0001	48.5	< 0.0001
COMPUTER	Without	15.4	< 0.0001	68.0	< 0.0001
(Own computer)	With	4.1	< 0.0001	20.8	< 0.0001
REF	Without	20.7	< 0.0001	77.8	< 0.0001
(Own ref)	With	7.9	< 0.0001	35.3	< 0.0001
IRON	Without	22.9	< 0.0001	80.7	< 0.0001
(Own electric iron)	With	10.7	< 0.0001	47.5	
STOVE	Without	23.2	< 0.0001	79.2	< 0.0001
(Own LPG / gas stove / range)	With	10.8	< 0.0001	46.1	< 0.0001
WMACH	Without	18.0	73.0	< 0.0001	
(Own washing machine)	With	8.5	< 0.0001	32.4	< 0.0001
MICROW	Without	15.1	< 0.0001	68.4	< 0.0001
(Own microwave oven)	With	5.5	< 0.0001	20.1	< 0.0001
PHONE	Without	25.3	< 0.0001	78.1	< 0.0001
(Own telephone / cell phone)	With	8.4	< 0.0001	43.9	< 0.0001
AIRCON	Without	15.0	< 0.0001	67.4	< 0.0001
(Own aircon)	With	4.2	< 0.0001	20.1	< 0.0001
CAR	Without	14.7	< 0.0001	70.7	< 0.0001
(Own vehicles)	With	5.1	< 0.0001	32.0	< 0.0001

incidence was found to be much higher among households without these household consumer durables.

Access to government or private organization programs on gender issues, peace and order, health, education, credit, and other programs were found to be significant predictors of the poverty status of households residing in Pasay City (Table 6). A higher poverty incidence can be observed among households that received these programs compared to the households that did not receive them. Effect of government or private organization programs on the poverty status of household in Mogpog, Marinduque was not investigated since similar data were not available for Mogpog, Marinduque.

*Poverty Incidence Model.* The Pasay City poverty incidence regression model was found to be overall significant (p < 0.0001) with 18 significant correlates of poverty incidence enumerated in Table 7. Correlates which positively or directly affect barangay poverty incidence in Pasay City include AVE\_HSIZE, PROP\_SEX, PROP\_OFWIND, PROP\_THIRDSEX, PROP\_FOODIND, PROP\_ TENUR, PROP\_WALL, PROP\_WMACH, PROP\_AIRC, and PROP\_OTHPRIND. On the other hand, correlates which negatively or

# Table 6

Distribution of poor	households by househol	d's availment o	of programs,	Pasay City
<i>v</i> 1	2			~ ~ ~

VARIABLE	CATEGORIES	% POOR	P-VALUE	
SEXPROG	Did not receive	13.5	< 0.0001	
(Received programs on gender issues)	Received	18.9	< 0.0001	
PEACEPROG	Did not receive	13.3	0.0004	
(Received programs on peace and order)	Received	14.3	0.0004	
MEDHEAL	Did not receive	13.5	0.01(4	
(Received programs on health)	Received	14.2	0.0164	
MSCHOL	Did not receive	13.5	< 0.0001	
(Received programs on education)	Received	26.3	< 0.0001	
MTRAININD	Did not receive	13.7	0.2024	
(Received programs on livelihood training)	Received	11.8	0.3034	
ASSHLOTIND	Did not receive	13.7	0.1002	
(Received programs on housing)	Received	11.1	0.1992	
CREDIND	Did not receive	13.6	0.0020	
(Received credit programs)	Received	19.0	0.0020	
CLEANPROG	Did not receive	13.7	0.7214	
(Received cleanliness programs)	Received	13.5	0./314	
JOBPROG	Did not receive	13.6	0.2211	
(Received employment programs)	Received	15.7	0.2311	
OTHPRIND	Did not receive	13.3	< 0.0001	
(Received other programs)	Received	17.9	~ 0.0001	

inversely affect barangay poverty incidence in Pasay City include PROP\_BOARDIND, PROP\_JOBIND, PROP\_COMPUTIND, PROP\_ COMPUTER, PROP\_REF, PROP\_PHONE, and PROP\_CLEANPROG.

There was no multicollinearity among the significant correlates under this poverty incidence

model as supported by the tolerance and variance inflation statistics. Furthermore, this Pasay City poverty incidence model also satisfied normality (p = 0.9600), and consequently homoscedascity, as well as independence assumption of the residuals (p < DW = 0.7531 and p > DW = 0.2469). The adjusted R-square of this poverty incidence

# Table 7

Significant correlates in Pasay City poverty incidence model

CORRELATES	PARAMETER ESTIMATE*	<b>P-VALUE</b>	
AVE_HSIZE	0.10068	<0.0001	
(Average household size)	(0.01189)	<0.0001	
PROP_SEX	0.28332	0.0004	
(Proportion of households who are headed by a male person)	(0.07901)	0.0004	
PROP_OFWIND	0.43122	<0.0007	
(Proportion of household with an OFW member)	(0.12462)	<0.0007	
PROP_THIRDSEX	1.46496	0.0016	
(Proportion of households with members belonging to the third sex)	(0.46236)	0.0010	
PROP_BOARDIND	-1.03444	<0.0001	
(Proportion of households with boarders/bedspacers)	(0.25858)	<0.0001	
PROP_JOBIND	-0.12098	0.0485	
(Proportion of household heads who are employed)	(0.06091)	0.0105	
PROP_FOODIND	0.64818	0.0097	
(Proportion of households engaged in food services)	(0.24813)	0.0097	
PROP_COMPUTIND	-1.91134	0.0046	
(Proportion of households engaged in computer communication)	(0.66630)	0.0010	
PROP_CNSIND	-0.67962	<0 0001	
(Proportion of households engaged in construction)	(0.16586)	0.0001	
PROP_TENUR	0.18870	<0 0001	
(Proportion of households whose housing units/lot are not owned)	(0.02890)		
<b>PROF_WALL</b>	0.18761	0.0002	
or salvaged/makeshift materials)	(0.05066)	0.0003	
PROP COMPUTER	-0.22789	0.0050	
(Proportion of households who own computer)	(0.08066)	0.0052	
PROP REF	-0.45935	<0.0001	
(Proportion of households who own refrigerator)	(0.06918)	<0.0001	
PROP_WMACH	1.6865	0.0002	
(Proportion of households who own washing machine)	(0.06417)	0.0093	
PROP_PHONE	-0.27615	<0.0001	
(Proportion of households who own telephone/cellphone)	(0.06104)	< 0.0001	
PROP_AIRC	0.31213	0.0002	
(Proportion of households who own aircon)	(0.08313)	0.0002	
PROP_CLEANPROG	-0.05871	0.0019	
(Proportion of households who received cleanliness programs)	(0.01855)	0.0018	
PROP_OTHPRIND	0.13592	0.0002	
(Proportion of households who received other programs)	(0.03523)	0.0002	

\* Numbers inside parenthesis are standard error of the estimate.

# Table 8

Significant correlates in Mogpog poverty incidence model

CORRELATES	PARAMETER ESTIMATE*	P-VALUE
AVE_HSIZE (Average household size)	0.12249 (0.04331)	0.0081
PROP_CROPIND (Proportion of households engaged in crop farming and gardening)	-0.19126 (0.06606)	0.0069
PROP_TV (Proportion of households who own TV)	-0.58926 (0.21388)	0.0097
PROP_IRON (Proportion of households who own electric iron)	-0.42589 (0.17283)	0.0195

\* Number inside parenthesis are standard error of the estimate.

#### Table 9

Significant correlates in the poverty incidence model for the combined data of Pasay City and Mogpog, Marinduque

CORRELATES	PARAMETER ESTIMATE*	P-VALUE
AREA	-0.37893	<0.0001
(Location of the barangay)	(0.02167)	<0.0001
AVE_HSIZE	0.10355	<0.0001
(Average household size)	(0.01133)	<0.0001
<b>PROP_TENUR</b> (Proportion of households whose housing units/lot are not owned)	0.23787 (0.03569)	<0.0001
PROP_PHONE (Proportion of households who own telephone/cellphone)	-0.65644 (0.04200)	<0.0001

\* Number inside parenthesis are standard error of the estimate.

model was 84.77% indicating that 84.77% of the variation in poverty incidence at the barangay level is accounted for by the significant correlates adjusted for the number of correlates used.

On the other hand, the significant Mogpog poverty incidence regression model (p < 0.0001) had four correlates of poverty incidence having an adjusted R-square of 79.83%. The four significant correlates are enumerated in Table 8.

A positive relationship was observed between poverty incidence and AVE\_HSIZE. This implied that barangays with high average household sizes have higher poverty incidences. On the other hand, inverse relationships were observed between poverty incidence and the following correlates: PROP\_CROPIND, PROP\_TV, and PROP\_IRON. This implied that the higher the proportions of households who own TV, who own electric iron, and who engage in crop farming or gardening in a barangay, the lower the poverty incidence in this barangay.

This Mogpog poverty incidence model passed the diagnostic checking performed on its residuals. Tolerance and variance inflation statistics indicated absence of multicollinearity. It satisfied assumptions of normality (p = 0.5294) and independence of residuals (p < DW = 0.6055 and p > DW = 0.3945).

Multiple regression analysis was likewise performed on the combined CBMS data collected from Pasay City and Mogpog, Marinduque. Results showed that the model was significant (p < 0.0001) with four correlates that are not multicollinear (Table 9). This model has an adjusted R-square of 91.40% satisfying normality (p = 0.2540) and independence (p < DW = 0.3287 and p > DW =0.6713) of residuals assumptions.

An inverse relationship was observed between barangay level poverty incidence and location of the barangay, that is, lower poverty incidences are observed in barangays located in a rural area. Also, the proportion of households who own telephone/cellphone negatively affect barangay level poverty incidence. This implied that the higher the proportions of households who own telephone/cellphone in a barangay, the lower the poverty incidence is in that barangay. On the other hand, average household size and proportion of households whose housing units/lot are not owned positively affect barangay level poverty incidence.

### CONCLUSIONS

Utilizing the 2005 CBMS census data, this study identified correlates of poverty for Pasay City and Mogpog, Marinduque, selected urban and rural areas in the Philippines, respectively. The results from the bivariate and multivariate analyses showed that for both areas, average household size positively affect barangay level poverty incidence. It is imperative that family planning programs be aggressively disseminated to properly educate couples and adults on responsible parenthood and on the direct correlation between large household size and higher poverty incidence.

Further analyses on the combined CBMS data from both areas allowed the assessment of the effect of the location of a barangay (whether urban or rural) on the barangay level poverty incidence. Results showed that lower poverty incidences were observed in barangays located in an urban area, that is, households located in urban areas were better-off relative to those in rural areas. Barangays having higher proportions of households who own telephone/cellphone in a barangay had lower poverty incidences, while barangays with higher proportions of households whose housing units/lot are not owned had higher poverty incidences. Hence, appropriate housing programs should be studied and implemented in order to achieve poverty reduction.

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